Aquifer Exemptions

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Outline

- Key Principles of the Safe Drinking Water Act (SDWA) and the Underground Injection Control (UIC) Program
- Background on Aquifer Exemptions
- Roles and Responsibilities
- EPA Review of AE Requests
- Aquifer Exemption Inventory
- Consistency and predictability in the AE review process
  - EPA's Policy Memorandum and Checklist
- Basis for exemption and EPA's assessment

The Safe Drinking Water Act

SDWA and the Underground Injection Control Program are designed to prevent endangerment of underground drinking water sources

(SDWA 1421(b))

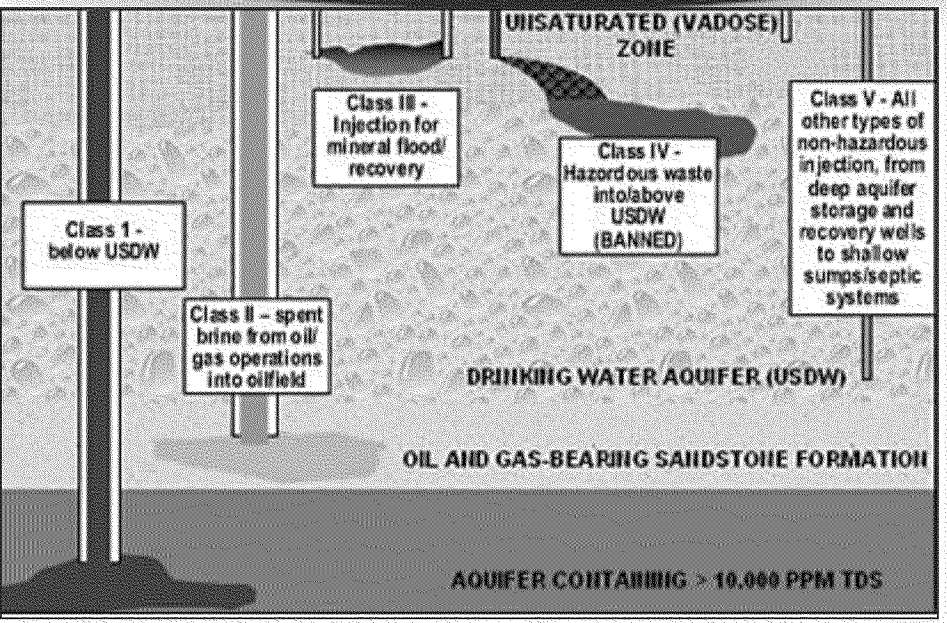
Definition (40 CFR 144.3)

- *Underground source of drinking water (USDW)* means an aquifer or its portion:

  (a)(1) Which supplies any public water system; or
  (2) Which contains a sufficient quantity of ground water to supply a public water system; and
  (i) Currently supplies drinking water for human consumption; or
  (ii) Contains fewer than 10,000 mg/l total dissolved solids; and
  (b) Which is not an exempted aquifer.

- All USDWs are required to be protected by the UIC program

Underground Injection Control



Classes I–IV & VI

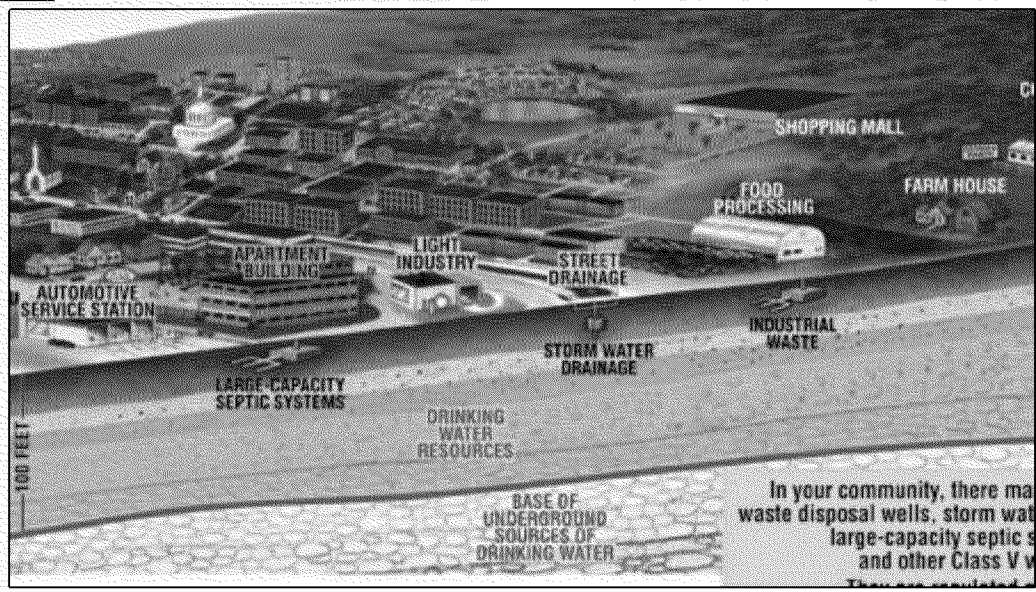
- Must have permit
- Specific requirements for siting, construction, operation

Class V

- May be rule authorized
- Cannot endanger

Aquifer Exemptions

- For aquifers of portion thereof with TDS ≤ 10,000 mg/l
- Criteria at 40 CFR 146.4
- Not subject to UIC permitting requirements



Background on AEs

Background on AEs

- AEs allow injection into an aquifer which otherwise would have been prohibited by the UIC program.
- AEs have been primarily used to allow mineral, hydrocarbon, or geothermal energy production.
- AEs are considered a program revision and therefore require EPA review and approval.
- EPA has final responsibility for AE decisions, even if a state has primacy for the UIC program.
- EPA, when approving an AE, makes a determination that the proposed exemption area is not used and will not be used as a source of drinking water.
- The AE provisions in regulations ensure that no current user of the aquifer will lose his/her water supply.
- The scrutiny on EPA's rationale and consistency in decision making is rising, especially if there are drinking water wells nearby.

Roles & Responsibilities

Owners/Operators:

- Owners/Operators submit a request for an AE to primacy agency

States/Tribes:

- States or tribes with primacy will review the request and determine whether to submit to EPA

EPA:

- The EPA Region evaluates the application and responds by letter to the state
- If EPA has Direct Implementation of the UIC program in a state, it will review the application directly from the applicant
- The final determination should be documented in a Statement of Basis that explains the factual, technical, and legal bases for the determination.
- EPA HQ will offer support to EPA Regions for substantial or complex requests and to promote national consistency.

Federal Regulations

- Two sections of the federal UIC regulations address the evaluation and review of AE requests by EPA:

  (1) 40 CFR 144.7 – allows the UIC Program Director to identify aquifers or portions of aquifers that are exempt from the definition of a USDW and describes how such exempted areas of aquifers would be delineated.

  (2) 40 CFR 146.4 – once an area to be exempted is identified, 146.4 provides the criteria by which the aquifer is evaluated to determine if exemption is appropriate.

Aquifer Exemptions: Criteria for Exemptions (40 CFR 146.4)

(a) It does not currently serve as a source of drinking water; **and**

(b) ***It cannot now and will not in the future serve as a source of drinking water*** because:
(1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
(4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; **or**

(c) ***The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system***

Aquifer Exemptions
EPA Guidance 34

- EPA developed Guidance 34 (January 9, 1984) to address UIC program revisions, either in response to primacy applications or aquifer exemptions that require a program revision.

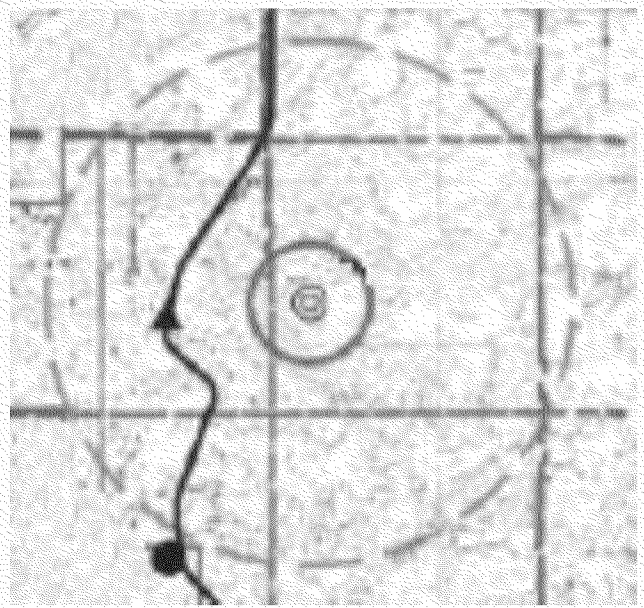
- Guidance 34
  - Supplements the rule criteria at 146.4 by discussing specific considerations associated with the criteria.
  - Provides guidelines for reviewing AE requests (Attachment 3 of Guidance 34).
  - Clarifies the concept of substantial and non-substantial program revision and addresses review and approval of non-substantial program revisions which are the responsibility of the Regional Administrator.
  - Discusses evaluation criteria to demonstrate current use of aquifer as source of drinking water, including survey of the proposed exempted area to identify any water supply wells which tap the proposed exempted aquifer.
  - Clarifies that the area to survey should cover the proposed exempted area and a buffer zone which should extend a minimum of ¼ of a mile from the boundary of the exempted area.

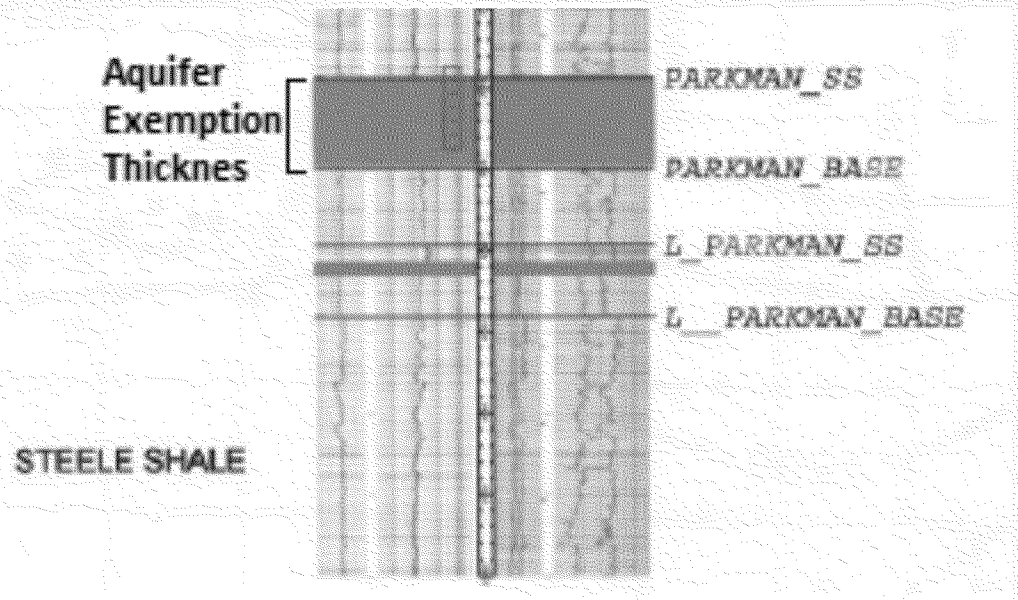
Aquifer Exemptions Delineation - Examples

The aquifer exemption boundary is determined based on where the limits where the injected fluids are expected to flow.

Lateral Limits:
Lateral extent of exemption is usually a distance radially from the well bore.

Vertical Limits:
Vertical extent typically coincides with the injection zone





Aquifer Exemptions Inventory

Class	Aquifer Exemptions
Class I	140
Class II	4,614
	II D: 1,251
	II R: 3,037
	II Other: 326
Class III	120
Class V	2
Unknown	61
Total	4,937

Aquifer Exemption Policy Memorandum and Checklist

Aquifer Exemptions
Need for Consistency

- Over the last several years, EPA identified the need to provide national consistency and additional clarity on the AE review and determination process
  - Increased public attention around ground water use and protection efforts and water scarcity and drought is impacting many areas of the country
  - A few recent proposed exemptions are in close vicinity to drinking water wells
  - A law suit against EPA on its recent approval of an aquifer exemption request
  - A recent discovery of injection activities taking place in aquifers that were not exempt
  - States' claim of EPA late engagement in the process, which can significantly upset the state planning process
  - An industry request for EPA to communicate early on in the process
- EPA HQ engaged its regional staff, Water Division Directors and a number of key states which participated in a work group organized by the Ground Water Protection Council (GWPC), to help bring greater clarity to the needs and expectations of EPA and states in approving AE requests.
- The key AE process improvements discussed with the states informed the policy memorandum.
- Informed by discussions with the states and its regions, EPA recently issued a memorandum to its Regional Water Division Directors, along with a checklist for the aquifer exemption review process, to help bring greater clarity to the needs and expectations of EPA and states in approving AE requests.

Aquifer Exemptions
The Policy Memorandum

Key points

- Provides consistency and predictability in the AE review process.
- Introduces a checklist for the AE approval process to be shared with state programs.
- Highlights factors that are likely to make AE requests more complex (including in particular, nearby drinking water wells).
- Suggests early consultation between EPA regions and states to discuss key AE issues likely to make the request complex.
- Clearly articulates that EPA's consideration of current underground sources of drinking water recognizes ground water movement.
- Suggests course for dispute resolution with states if needed.

Aquifer Exemptions
The Checklist

Purpose

- Promotes national consistency on the review process.
- Ensures that appropriate and adequate information is collected to facilitate review of AE requests, and documentation of AE decisions.
- Is not a “one size fit all” document as some information described in it may not apply to all AE requests.
- Facilitates discussions between EPA regions and applicants (DI) or states and helps manage expectations.
- Helps with EPA’s documentation of its review and decision on the request, to inform a statement of basis to be included in the Agency’s record of final action.
- Provides a mechanism of consistent data collection for a robust, standardized recordkeeping and data mapping.

Aquifer Exemption Checklist

Reviewer ________________ Date_ ________

A. Regulatory Background & Purpose

An aquifer or its portion which meets the criteria for an "underground source of drinking water" in § 146.3 may be determined to be an "exempted aquifer". The aquifer exemption criteria at 146.4 must be met as follows:

Class 1V wells must meet criteria 146.4(a) and 146.4(b)(l); or 146.4(a) and 146.4(b)(2); or 146.4(a) and 146.4(b)(3); or 146.4(a) and 1464(b)(4); or 146.4(a) and 146.4(c).

Class VI wells must meet the criteria 146.4(d)[1]

Regardless of the AE request or the type of injection activity, in all cases, first and foremost a demonstration that the aquifer or portion thereof does not currently serve as a source of drinking water is the required first step in the process. EPA must evaluate each AE request to ensure the criteria are met prior to approval. EPA should also document its rationale for approving or disapproving each AE request in its statement of basis and, in case of exemptions that are substantial program revisions, EPA must provide public notice and an opportunity for the public to comment and request a public hearing.

The purpose of this checklist is to ensure that appropriate and adequate information is collected to facilitate review of AE requests, and documentation of AE decisions. Some information described here may not apply to all AE requests.

B. General Information

AE request received by EPA on - - - - - - - - - - - - - -

Is the aquifer exemption Substantial   Non-Substantial______________ _

Describe basis for substantial/non-substantial determination______________ _ _ ____________ _________

Is the aquifer exemption Complex? (Existence of drinking water wells, populated area ...) - - - - - - - - - - - -

Did the state or tribe provide public notice and opportunity for public hearing on the aquifer exemption request (144.7 (b)) Y/N

Were there any public comments? Y/N If yes, identify where they may be located_ _ _ ___________ ______________

Date(s) of notice(s) published   Public meeting(s) held   Hearing held

_ _ _ _ _ _ _, any notable findings or pending litigation -

Describe the notice and comment process and the final decision______________ _______ _ _____________________

Describe the basis for the decision to exempt the aquifer or the basis for the decision to withhold or deny approval of the exemptions request- -

Any anticipated issues associated with EPA approval or disapproval of the AE request

Y/N- - - - - - - - - - - - - - -

Any meetings between EPA/States/Tribes/Operator to discuss issues Y/N   list_ _____________________________

Is the request submitted by a primacy state or tribe? Y/N If yes name the State/Tribe/Agency

_______ Contact"- -

AE identified by the Primacy State or tribe and submitted for EPA review and final determination on - - - - - - - -

Name of the Owner/operator_ _________________________________ _

Well/Project Name:_______ _ _ _ _ ______ _ _ ______ _ _______ _ Well Class - - - - - - - - - - - -

Purpose of injection: __________________________________(mineral mining/oil and gas/other)

Where is the proposed aquifer exemption located? Township, Section, Range, Quarter Section or other method used to identify the area   Latitude and longitude information   County   City______ _ _ _

State__________Add information about distance to nearest Town, County _ ____________ __________ _ _________

Name of aquifer or portion of aquifer to be exempted -

[1] Additional Class VI only requirements in 40 CFR 144.7(d)(1) and (2) apply. This checklist does not address those requirements.

EPA Assessment
Current Source

What constitutes an aquifer that currently serves as a source of drinking water per 40 CFR 146.4(a) i.e., Does the aquifer or its portion proposed for exemption currently serve as source of drinking water?

- EPA first needs to determine whether any drinking water well (both public and private) either exists within the proposed exempted area, or for which the proposed exempted portion of the aquifer might be a source of drinking water.
- If there are drinking water wells within or in close proximity to the proposed exempted area:
  - a capture zone analysis may be required
  - EPA's evaluation is based on the capture zone of the well – i.e., the volume of the aquifer(s) or portion(s) thereof from within which groundwater is expected to be captured by that well during the life of the well.
- *If any public or private drinking water wells or springs are (or will over the lifetime of the well) capturing or producing drinking water from ore-bearing aquifers within the proposed exemption area, then the aquifer currently serves as a source of drinking water.*

EPA Assessment
Future Use

What key factors to consider when demonstrating that an aquifer cannot now and will not in the future serve as a source of drinking water per 40 CFR 146.4(b), or that an aquifer is not reasonably expected to supply a public water system per 40 CFR 146.4(c)?

- 146.4(b)(1) – mineral, hydrocarbon, or geothermal producing
- Likelihood that the water in the exempted area would need to be used as a drinking water source in the future.
- Remoteness / Low Population.
- Availability of alternative water supplies to satisfy future drinking water needs
  - Population projections and growth
  - Future demand in the area
  - Alternative water supply in the area
- Available treatment or drilling technologies.
- Cost of obtaining drinking water from deeper aquifers.

Next Steps

- Continue to communicate early on in the process on AE requests to identify potential issues and resolve them expeditiously.

- Identify additional process improvement opportunities and work with stakeholders to provide additional clarity
  - Define parameters that are used to inform calculations when a capture zone analysis is needed
  - Provide additional considerations to inform the determination of "future use" of an aquifer
    - What is considered "in the future"
    - Timeframe over which the impact of the operation will be evaluated (number of years)

Questions??

Thank You!